Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) Apparatus comprising:

a plurality of droplet ejection devices, each said droplet ejection device including:

a fluid chamber having a volume and an ejection nozzle,

~~an electrically actuated~~ piezoelectric actuator ~~displacement device~~ that moves between a displaced position and an undisplaced position to change said volume of said chamber as a capacitance associated with the ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ changes in charge between an actuated condition and an unactuated condition, and

a first switch that has a first input connected to an electric source terminal, a first output connected to said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~, and a first control signal input to determine whether said first input is connected to or disconnected from said first output, wherein an applied electric source distributes an electrical signal to said first inputs of said plurality of droplet ejection devices, and

a controller that provides respective charge control signals to respective said first control signal inputs to control an extent of change in charge on respective said capacitances when the respective said first switch connects said electrical signal to the respective said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ and to set a constant amount of charge on respective said capacitances in the actuated condition when the respective said first switch disconnects said electrical signal to the respective said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~, wherein the disconnection maintains a constant voltage on respective said capacitances by storing the constant amount of charge on respective said capacitances, and

wherein each of said plurality of droplet ejection devices is configured for individual control of charge accumulation on respective said capacitances and for individual control of the extent of change in charge on respective said capacitances.

2. (Currently Amended) The apparatus of claim 1 wherein said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ moves between a displaced position and an undisplaced position as a capacitance associated with the ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ changes between a charged, actuated condition and an uncharged, unactuated condition, and

wherein said controller that provides respective charge control signals to respective said first control signal inputs to control the extent of charge placed on respective said capacitances by the time that the respective said first switch connects said electrical signal to the respective said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~.

3. (Currently Amended) The apparatus of claim 2

wherein each said droplet ejection device also includes a second switch that has a second input connected to a discharging electrical terminal, a second output connected to said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~, and a second control signal input to determine whether said second input is connected to or disconnected from said second output, and

wherein said controller provides respective discharge control signals to respective said second control signal inputs to control discharge of the charge on said respective capacitances,

and wherein each of said plurality of droplet ejection devices is configured for individual control of the discharge of the charge on respective said capacitances.

4. (Currently Amended) The apparatus of claim 1 wherein each said droplet ejection device comprises a first resistance between said electric source and said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~.

5. (Currently Amended) The apparatus of claim 3 wherein each said droplet ejection device comprises a second resistance between said discharging electrical terminal and said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~.

6. (Currently Amended) The apparatus of claim 3 wherein each said droplet ejection device has a first resistance that is between said electrical source and said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ and is external of an electrical path from said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ to said second switch, and further comprising a second resistance that is included in the electrical path from said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~ to said discharging electrical terminal.

7. (Original) The apparatus of claim 3 wherein a single resistance is used to charge and discharge a respective capacitance.

8. (Currently Amended) The apparatus of claim 1 wherein a plurality of resistors, voltages and switches are connected to each said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ and controlled by said controller to change the charge on said capacitance.

9. (Original) The apparatus of claim 3 wherein said discharging electrical terminal is at ground.

10. (Original) The apparatus of claim 1 wherein said electrical signal is a controlled voltage signal.

11. (Original) The apparatus of claim 1 wherein said electrical signal is a controlled current signal.

12. (Original) The apparatus of claim 1 wherein said electrical signal is a constant current.

13. (Currently Amended) Apparatus comprising:

a plurality of droplet ejection devices, each said droplet ejection device including:

a fluid chamber having a volume and an ejection nozzle,

~~an electrically actuated~~ piezoelectric actuator ~~displacement device~~ that moves between a displaced position and an undisplaced position to change said volume of said chamber as a capacitance associated with the ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ changes between a charged, actuated condition and an uncharged, unactuated condition, and

a first switch that has a first input connected to a voltage source terminal, a first output connected to said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~, and a first control signal input to determine whether said first input is connected to or disconnected from said first output, wherein a voltage source distributes a constant voltage electrical signal to said first inputs of said plurality of droplet ejection devices, and

a controller that provides respective charge control signals to respective said first control signal inputs to control an extent of charge placed on respective said capacitances when the respective said first switch connects said electrical signal to the respective said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ and to set a constant amount of charge on respective said capacitances in the actuated condition when the respective said first switch disconnects said electrical signal to the respective said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~, wherein the disconnection maintains a constant voltage on respective said capacitances by storing the constant amount of charge on respective said capacitances, and

wherein each of said plurality of droplet ejection devices is configured for individual control of charge accumulation on respective said capacitances and for individual control of the extent of change in charge on respective said capacitances.

14. (Currently Amended) The apparatus of claim 13 wherein said first control signal terminates the connection of said constant voltage to said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ when the charge on said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ is at a predetermined value which is less than said constant voltage.

15. (Currently Amended) The apparatus of claim 13 wherein each said droplet ejection device also includes a second switch that has a second input connected to a discharging electrical terminal, a second output connected to said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~, and a second control signal input to determine whether said second input is connected to or disconnected from said second output, and wherein said controller provides respective discharge control signals to respective said second control signal inputs to control discharge of the charge on said respective capacitances.

16. (Canceled)

17. (Original) The apparatus of claim 1 or 13 wherein said first control signals are controlled to provide uniform droplet volumes or velocities from said plurality of droplet ejection devices.

18. (Original) The apparatus of claim 1 or 13 wherein said first control signals are controlled to provide predetermined different drop volumes or velocities from different droplet ejection devices so as to provide gray scale control.

19. (Original) The apparatus of claim 3 or 15 wherein said first and second control signals are controlled to provide predetermined different drop volumes or velocities from different droplet ejection devices so as to provide gray scale control.

20. (Currently Amended) The apparatus of claim 3 or 15 wherein said first and second control signals are controlled to connect said electrical signal to respective said ~~electrically actuated~~ piezoelectric actuators~~displacement devices~~ for respective predetermined times.

21. (Currently Amended) The apparatus of claim 1 or 13 wherein respective said first control signals are controlled to connect said electrical signal to respective said ~~electrically~~

~~actuated~~ piezoelectric actuators ~~displacement devices~~ until respective said ~~electrically actuated~~ piezoelectric actuators~~displacement devices~~ achieve respective predetermined charge voltages.

22. (Original) The apparatus of claim 1 or 13 wherein said first control signals are controlled to provide a voltage that is insufficient to eject a droplet, but is sufficient to move a meniscus of a liquid at an ejection nozzle of said droplet ejection device.

23. (Original) The apparatus of claim 3 or 15 wherein said first and second control signals are controlled to provide a voltage that is insufficient to eject a droplet, but is sufficient to move a meniscus of a liquid at an ejection nozzle of said droplet ejection device.

24. (Original) The apparatus of claim 1 or 13 wherein said first control signals are controlled to inject noise into images being printed so as to break up possible print patterns and banding.

25. (Original) The apparatus of claim 3 or 15 wherein said first and second control signals are controlled to inject noise into images being printed so as to break up possible print patterns and banding.

26. (Currently Amended) The apparatus of claim 3 or 15 wherein said first and second control signals are controlled to vary the amplitude of charge as well as the length of time of charge on said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ for the first droplet out of a droplet ejection device so as to match subsequent droplets.

27. (Original) The apparatus of claim 1 or 13 wherein said apparatus is an inkjet print head.

28. (Previously Presented) The apparatus of claim 1 or 13 wherein said controller includes a field programmable gate array on a circuit board mounted to a monolithic body in which said fluid chambers are formed.

29. (Original) The apparatus of claim 1 or 13 wherein said controller controls said first switch as a function of the frequency of droplet ejection to reduce variation in drop volume as a function of frequency.

30. (Previously Presented) A method to control a response of a plurality of droplet ejection devices, each of said plurality of droplet ejection devices comprising a charging switch and a piezoelectric actuator, the method comprising:

individually controlling the charging switch for each piezoelectric actuator in said plurality of droplet ejection devices, wherein each said charging switch comprises an input terminal to connect to an electrical source, an output terminal to connect to the respective piezoelectric actuator, and a control signal terminal to control an electrical connection or electrical disconnection between said electrical source and said respective piezoelectric actuator;

individually generating an actuated condition for each piezoelectric actuator in said plurality of droplet ejection devices by controlling an extent of change in charge on a capacitance associated with the respective piezoelectric actuator when said respective charging switch forms an electrical connection between said electrical source and said respective piezoelectric actuator; and

individually maintaining the actuated condition for the respective piezoelectric actuator by setting a constant amount of charge on the respective associated capacitance when said respective charging switch electrically disconnects said electrical source and said respective piezoelectric actuator, wherein the disconnection maintains a constant voltage on said respective associated capacitance by storing the constant amount of charge on said respective associated capacitance.

31. (Previously Presented) The method of claim 30 further comprising:

individually generating an unactuated condition for the respective piezoelectric actuator by activating a discharging switch that has a discharging input connected to a discharging electrical terminal, a discharging output connected to the respective piezoelectric device, and a

discharging control signal input to determine whether said discharging input is electrically connected to or electrically disconnected from said discharging output; and

individually providing a discharge control signal to said discharging control signal input to control discharge of the charge on respective said capacitance.

32. (Previously Presented) The method of claim 31, wherein the amount of charge on the respective capacitance is greater in the actuated condition than the amount of charge in the unactuated condition.

33. (Currently Amended) A method for dispensing fluid for a plurality of droplet ejection devices, the method comprising:

for each said droplet ejection device, moving ~~an electrically actuated~~ piezoelectric actuator ~~displacement device~~ between a displaced position and an undisplaced position to change a volume of a fluid chamber as a capacitance associated with the ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ changes in charge between an actuated condition and an unactuated condition;

for each said droplet ejection device, distributing an electric signal from an electric source to a first input of a first switch of said droplet ejection device, wherein the first input of the first switch connects to a terminal of the electric source, and a first output of the first switch connects to said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~;

for each said droplet ejection device, determining whether a first control signal input of the first switch forms an electrical connection or electrically disconnection between said first input and said first output; and

individually controlling respective charge control signals to respective said first control signal inputs, wherein the controlling comprises:

for each said droplet ejection device, controlling an extent of change in charge on respective said capacitances when the respective said first switch connects said electrical signal to the respective said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~; and

for each said droplet ejection device, setting a constant amount of charge on respective said capacitances in the actuated condition when the respective said first switch disconnects said electrical signal to the respective said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~, wherein the disconnection maintains a constant voltage on respective said capacitances by storing the constant amount of charge on respective said capacitances.

34. (Currently Amended) The method of claim 33 further comprising:

for each said droplet ejection device, moving said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ between a displaced position and an undisplaced position as a capacitance associated with the ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~ changes between a charged, actuated condition and an uncharged, unactuated condition; and

for each said droplet ejection device, providing respective charge control signals to respective said first control signal inputs to control the extent of charge placed on respective said capacitances by the time that the respective said first switch connects said electrical signal to the respective said ~~electrically actuated~~ piezoelectric actuator~~displacement device~~.

35. (Currently Amended) The ~~apparatus~~ method of claim 34 further comprising:

for each said droplet ejection device, using a second switch that has a second input connected to a discharging electrical terminal, a second output connected to said ~~electrically actuated~~ piezoelectric actuator ~~displacement device~~, and a second control signal input to determine whether said second input is connected to or disconnected from said second output; and

providing respective discharge control signals to respective said second control signal inputs to individually control discharge of the charge on each said respective capacitances.